Food Security and Agriculture : Applying ESD to Global Challenges for a Sustainable Future

Journal of Developments in Sustainable Agriculture 4: 1-6 (2009)

Food Security and Agriculture: Applying ESD to Global Challenges for a Sustainable Future

Derek Elias

Chief, Education for Sustainable Development Unit, UNESCO Asia and Pacific Regional Bureau for Education, UNESCO Bangkok Office, Thailand

This article points out the challenges to food security and agriculture and reveals how ESD plays an important role in education for sustainable agriculture. The current global financial turmoil is exacerbating concerns about rising food and fuel costs. Secretary-General Ban Ki-Moon has termed this 'the new face of hunger'. More than 850 million people are starving and the food crisis is even threatening the stability of already fragile democracies like Afghanistan. The dilemma between affluence and poverty is distinct taken into consideration that the main problem is not the lack of food, but the surge of food prices which makes basic sustenance unaffordable for millions.

At the same time the world population continues to grow. Food production needs to rise by 50% by the year 2030 to meet the needs of population growth and changes in consumption patterns. The tendency is clear: the more countries have economic development, the more they consume animal protein. However, meat production is a major source of greenhouse gases and the typical land use attached to it is generally inefficient and prone to cause soil degradation. Resource use related to agriculture and food production is highly unsustainable.

Agriculture is still the most common occupation globally. Thus attention is needed in linking education and food security. Knowledge of the current state can lead to empowerment of people to take responsibility for their actions which is one of the primary aims of ESD. The thrusts of the ESD are providing and improving quality basic education, re-orienting existing education programmes, building public understanding and awareness and providing practical training. ESD brings sustainable issues to the forefront, and uses that perspective to address educational change which enables everyone to adapt behaviours and make informed decisions that can contribute to a sustainable future. ESD aims to provide all learners with support to develop skills to adapt to changing food security needs in their local context—for example, to seek out innovative farming methods and change consumption patterns.

Today's agricultural and trade practices are failing to feed the poor and have detrimental effects on the environment. Current cultivation of 'cash crops' such as cotton and coffee for export purposes contribute to the prevalence of food insecurity and create a strain on the ecosystem. These practices need to be re-considered with the holistic approach to education and development that ESD advocates. It seeks to enable individuals to view issues of food security as connected to their personal choices. For example through incorporating Education for Sustainable Development in vocational education programmes and agricultural practices, farmers can be transformed into 'farmers of tomorrow' who are better able to safeguard our ecosystems and preserve them for future generations. The way to this is exchanges in expertise between indigenous knowledge and future farmers. Community knowledge of local contexts must be integrated into sustainable approaches in order to address local needs and opportunities for farmers on maximizing agricultural production on a larger scale.

Key words: food security, agriculture, Education for Sustainable Development, global challenges

---

Received: October 31, 2008, Accepted: November 13, 2008
Corresponding author's current address: Chief, Education for Sustainable Development Unit, UNESCO Asia and Pacific Regional Bureau for Education, UNESCO Bangkok Office, 920 Sukhumvit Road, Bangkok 10110, Thailand.
Tel: (66 2) 391 0577 ext 509, Fax: (66 2) 391 0866, E-mail: d.elias@unesco.org

Introduction

The Asia-Pacific region is one of contrasting realities—small and large countries, sparse and dense populations, poor and rich economies. It is also diverse in terms of historical and cultural backgrounds, political systems and stages of development. Yet, even with all of these apparent differences, all of us here today are united; we are all here today because we are not satisfied with the current trajectory of our world. We are advocates for societal change and are seeking solutions for the numerous challenges our generation and possibly even that of our great-grandchildren will be tackling. One of the most pressing challenges societies are facing today is hunger. In this paper, I hope to give you a glimpse of the current and future challenges associated with food security and agriculture, and to simultaneously show you how Education for Sustainable Development can bring innovative solutions to the table with the hope to put our world on a different course than the one we seem to be rushing towards today.

APEID 8th Programme Cycle

But first, a few words on the APEID 8th Programme Cycle are in place. The Asia-Pacific Programme of Educational Innovation for Development (APEID) was established in 1973. Since then, the Programme has gone through seven programming cycles. The current 8th Programme Cycle which spans from 2008–2013, coincides with the UNESCO Medium-Term Strategy for 2008–2013 (34 C/4) and the three biennium programmes. In accordance with this, APEID's 8th Programme Cycle reflects a framework of action that aligns UNESCO's mandates and priorities with the Medium-Term Strategy and biennium programmes. The aim of the APEID 8th Programme Cycle is to continue to "contribute to sustainable human development, underpinned by tolerance, human rights and a culture of peace".

The key objectives of the 8th Programme Cycle are:

- To facilitate systemic reforms in higher education, teacher education, and technical and vocational education in Member States;
- To promote innovative practices in education for sustainable development and the use of ICT in education within educational institutions; and
- To strengthen APEID networks through regional coordination, regional knowledge-sharing, and inter-country technical cooperation.

For the 8th Programme Cycle, the programme areas have been streamlined and now include: Higher Education; Teacher Education; Technical and Vocational Education and Training (TVET); Education for Sustainable Development (ESD); Information and Communication Technologies (ICT) in Education.

The 8th Programme Cycle would not have been possible without the help of the APEID Steering Committee which continues to be an important guiding hand which APEID relies on for leadership and expertise. After a successful 7th Programme Cycle, an assessment of APEID activities and their outcomes was conducted in preparation for the 8th Programme Cycle, endorsed by the Standing Committee in May this year. I hope this Cycle is even more successful than its predecessors, and thank all those who have either directly or indirectly contributed to the process for your collaborative efforts.

Agriculture and Food Security as Global Challenges

The current global financial turmoil is exacerbating concerns about rising food and fuel costs: on top of the more than 850 million already starving, an additional 100 million people could be driven deeper into hunger and poverty (UN News Centre, 2008a). With rising energy costs, an increasing consumption of biofuels which some experts say reduces the amount of food available for humans, and the price of food having more than doubled in the past year alone, Secretary-General Ban Ki-Moon has recently termed this "the new face of hunger"—one that is increasingly affecting communities that had previously been protected from hunger. Unfortunately, the ramifications of these current events do not stop there. The food crisis is even threatening the stability of already fragile democracies (Ki-Moon, 2008). In January, the Afghan President Hamid Karzai highlighted the alarming fact that the average Afghan household now spends about 45% of its income on food, up from 11% in 2006 (Ki-Moon, 2008). Upon considering the many challenges, especially in the case of agricultural pro-

duction as we've come to see in the on-going "food crisis", we are forced to take a step back and truly appreciate the significance of the state of our world today.

Let me rephrase what I said above. Every day, almost 850 million people do not have enough food to eat. A child dies every six seconds of starvation (Un News Centre, 2008a). In a world where unimaginable affluence parallels such extreme poverty, it is difficult to call current trends in development sustainable or even consistent with commonly agreed goals. The dichotomy between affluence and poverty becomes even more drastic and perplexing when we take into account that there is plenty of food for everyone on this planet. It is not that the poor are hungry due to a lack of food, but the surge of food prices has compounded food insecurity issues further, by making basic sustenance unaffordable for millions more (UN News Centre, 2008b). Out of the chronically hungry, over half a billion women, men and children live here in Asia and the Pacific, with over 200 million in India alone (FAO, 2006).

Due to exponential growth of agricultural production since the 1960s already, past levels of growth cannot be sustained much longer. Somewhat scarily however, food production *needs* to rise by 50% by the year 2030 to meet rising demands (FAO, 2006), mostly due to population growth but also to increases in global affluence and changes in consumption patterns. Interestingly, we are living in a time where people, livestock and cars compete for the same raw materials, resulting in a myriad of challenges. Considering even longer term developments and assuming that the world population continues to grow, we are faced with an increasingly dire situation and the daunting question of how we are going to feed the 9 billion people projected to live on this planet in 2050 if we cannot feed the 7 billion people of 2015.

Another important trend that will be a major factor in defining the means to feed the hungry may seem a bit mundane at first: meat production is steadily increasing in developing countries. As an example, in China, meat production has more than doubled since 1990 and is predicted to increase by the same amount or more by 2030 (Zhou *et al.,* 2003). The current tendency is clear: the more countries have economic development, the more they consume animal protein. This pattern follows economic development so carefully that it seems to be universal rather than a learned behaviour pattern from industrialized countries. Of course education holds a priority in changing detrimental patterns, whether learned or not, and changing this trend would be an important task as meat production in particular is a major source of greenhouse gases (livestock production globally emits more carbon dioxide equivalents than transportation does), and the typical land use attached to it is generally inefficient and prone to cause extreme soil degradation. In this way, resource use related to agriculture and food production is highly unsustainable. Take the fact that globally, we extract 160 billion tons more water per year than is being replenished by rain; what many of you probably already know is that most of this water consumption is the result of agricultural practices (Steinfeld *et al.,* 2006).

Whilst speaking of food and agriculture, it is important to note that growing food is significant from other perspectives, too, and not simply for feeding the hungry and contributing to the economy. Over a third of the world's workers are active in agriculture. While down by 6 percent in ten years, agriculture is still the most common occupation globally. This may come as a surprise to many outside this and other circles of experts in the field of agricultural sciences, especially since reports this year have shown that over half of the world's population now lives in urban areas.

The facts aren't meant to overwhelm you and many of you will be familiar with them already. But knowledge of the state of our world is, ultimately, the only thing that can empower one to seek ownership and responsibility for his/her actions. This is one of the primary aims of ESD. So what can be done? As educators, students and experts in the field of agriculture and education, with the right priorities and strategic direction, we can achieve a lot.

Linkages between ESD and Food Security: Looking for Solutions in Education

I would like to quote the Minister of Education and Culture of Timor Leste, H.E. Joao Cancio Freitas, who recently stated in a workshop that "quality education is at the heart of any sustainable development possible for our country." A young state, Timor Leste is currently in a transition phase

and developing its infrastructure from the "ground up" with their motto for the education sector: *Building our nation through quality education.* Timor Leste is a good example to emphasize the importance of quality education to support sustainable development because it is a nation recovering from years of conflict and political unrest. Education in Timor Leste answers a question that many are beginning to ask in order to address some of the follow-up questions arising from the successes of Education for All (EFA), one of UNESCO's main global programmes in education. The key question is, once we have managed to get children and teachers to come to a quality school environment, "*Education for What?*"

Before we can even consider sustainable development, we need to meet the six EFA goals. However, the fulfilment of these goals does not ensure Education for Sustainable Development as such. I say so because, while having a positive impact on the quality of life and poverty alleviation, EFA neither touches upon nor questions the underlying purposes of education. Thus, the fundamental difference between EFA and ESD is that they both address a different set of needs: EFA focuses on the needs of all learners and their right to quality education whilst ESD brings sustainable and just development issues to the forefront, and uses that perspective to address educational change. In essence, ESD is EFA plus-plus.

Therefore, ESD has the potential to be an overarching framework for quality, providing a lens for relevant pedagogy and content—where quality education must drive to meet local needs, ESD can assist. As quality education focuses on the needs of all learners and their right to quality education, ESD then moves sustainable, just and peaceful development for all to the forefront and uses this perspective to drive learning that enables every person to adapt behaviours and make informed decisions that can contribute to a sustainable future.

Tackling Goliath Problems with ESD

ESD directs attention to the issues of food security and the connections which we cannot see, for example those between demography, wealth, agricultural production, consumption patterns, hunger, and crime, but which we need to be aware of in order to make appropriate political, institutional and individual decisions to address issues related to food security. In the context of fostering skills, learning and changes in behaviour—goals directly achievable by education—ESD aims to provide all learners from all walks of life with the space and support to develop sufficient skills to adapt to changing food security needs in their local context—for example, to seek out innovative farming methods, change consumption patterns and strive to improve personal nutrition habits.

The International Assessment of Agricultural Science and Technology for Development (IAASTD), published earlier this year at UNESCO, concludes that today's agricultural and trade practices are failing to feed the poor and have detrimental effects on the environment; this report highlights the consequences of the cultivation of 'cash crops' such as cotton, coffee, soybean for export purposes (IAASTD, 2009). Current agricultural practices unfortunately contribute to the prevalence of food insecurity and create a greater strain on the ecosystem. These practices need to be changed and reconsidered with the approach that ESD advocates, along with a holistic viewpoint and a consideration of long-term outcomes.

ESD is guided by four major thrusts of education, as outlined in Chapter 36 of Agenda 21, a guiding document for sustainable development adopted by 187 countries at the 1992 Earth Summit in Rio de Janeiro. The four thrusts of ESD are:

1. Providing and improving quality basic education to share knowledge, skills and values throughout a lifetime of learning to support citizens in leading sustainable lives;
2. Re-orienting existing education programmes, from early childhood learning opportunities to higher education to encourage content and pedagogy that supports sustainable development. In terms of food security, this entails, for example, learning about the underlying issues associated with food security and their linkages, stepping out of the classroom to interview neighbours in the community to learn how the issue impacts their own lives, and learning how to take local action.
3. Building public understanding and awareness through community education, including informal education through the media—such as non-formal education through Community

Learning Centres or disseminating information through radio or brochures to communities on, in terms of food security, new approaches to farming and where to obtain resources and support to adapt to changing circumstances.

4. Providing practical training to businesses, institutions and civil society to carry out sustainable practices—such as training of farmers unions to raise awareness of food security issues, how and why these issues affect local communities and learning new strategies for agricultural production and efficient food distribution to combat rising food costs.

Of course, I am only using the example of Food Security here, but these four thrusts for education and learning are intended to address sustainable development more broadly; from a holistic perspective to understand the linkages among the many global issues that we face today—climate change, biodiversity, poverty, crime, loss of indigenous knowledge and languages, gender equality and a plethora of issues that are relevant to our lives today.

One of the core characteristics of ESD is its holistic approach to education and development. This is also key to making a positive contribution to maintaining and achieving food security. ESD seeks to enable individuals to view issues of food security as connected to their personal choices, as well as to economic, social and environmental development in general and long term sustainability. Further, through incorporating Education for Sustainable Development in vocational education programmes and agricultural practices, farmers can be transformed into "farmers of tomorrow" who are better able to shoulder the responsibility to safeguard our ecosystems and preserve them for future generations. Farmers with new sets of skills are sensitized to see the impacts of their profession on the ecosystem and learn to adapt to the changing world by minimizing the negative consequences of their choices to the world we are living in. However, we all know that good will and increased levels of knowledge are not quite enough to change the world, In addition to these, we need working mechanisms to compensate for the obvious losses that often result from rapid changes from the old to the new systems. The Millennium Ecosystem Assessment (www.millenniumassessment.org) is an example of such a mechanism, providing a framework that takes the ecosystem and farmers' contributions to sustaining it into account. It works by compensating farmers for the environmental services that help to sustain the ecosystem and its resources. Often, ecosystem services require highly specialized knowledge of the local context; this is where exchanges in expertise between indigenous knowledge and future farmers can come in. Indeed, where applicable, indigenous and community knowledge of local contexts must be integrated into sustainable approaches—these types of knowledge are typically a more appropriate response to addressing local needs and opportunities for farmers than institutionalized knowledge on maximizing agricultural production on a larger scale.

Concluding Remarks

In this paper, I have touched upon some current and future challenges to food security, coming from current agricultural practices, how ESD plays an increasingly important role in education for sustainable agriculture, and some suggested solutions and programmes. I hope you are not daunted by the magnitude of the task. It is sometimes useful to stop thinking at the macro-level for a second, and to start reflecting first on the local one and to focus on smaller scale practices. For if true change is to occur at the policy and the macro levels, we will first, as educators, students and experts, create small ripples of change in our spheres of influence and not be overwhelmed with the end goal. What this should translate into are changes in how we see the roles of education and agriculture in society but also local council meetings debating different aspects of sustainability, as well as advocating these interests with the bigger picture in mind. When tackling global challenges, we should never overlook the local governing bodies and academic circles for their potential and ability to get ESD onto the agenda and into the minds of people who can help us make a difference.

References

IAASTD, 2009. International Assessment of Agricultural Knowledge, Science and Technology for Development, Executive Summary of the Synthesis Report. Intergovernmental Plenary in Johannesburg, South Africa (7-11 April 2008). http: //www.agassessment.org/docs/IAASTD_EXEC_SUMMARY_JAN_2008.pdf

FAO, 2006. *The State of Food Insecurity in the World (2006).* Eradicating world hunger—taking stock ten years after the World Food Summit. http: //www.fao.org/docrep/009/a0750e/a0750e00.HTM

Ki-Moon, B. 2007. March 12, The New Face of Hunger, Washington Post, http: //www.un.org/sg/articleFull.asp?TID=73&Type=Op-Ed; retrieved October 24, 2008

Steinfeld, H., Gerber, P., Wassenaar, T., Castel, V., Rosales, M. and de Haan, C., 2006. Livestock's Long Shadow: Environmental Issues and Options. Rome: Food and Agriculture Organization of the United Nations. http: //www.fao.org/docrep/010/a0701e/a0701e00.HTM

UN News Centre, 2008a. "World Food Day reminder of daily crisis borne by millions, say UN officials". http: //www.un.org/apps/news/story.asp?NewsID=28587 16 October 2008; retrieved October 24, 2008.

UN News Centre, 2008b. "Skyrocketing prices continue to threaten the right to food, UN expert says", http: //www.un.org/apps/news/story.asp?NewsID=28001 10 September, 2008; retrieved October 23, 2008.

Zhou, Z., Wu, Y. and Tian, W., 2003. Food consumption in rural China : Preliminary results from household survey data, Proceedings of the 15th Annual Conference of the Association for Chinese Economic Studies Australia (ACESA), Melbourne, RMIT Business Research Department Unit, 15 : 1-37